

ABSTRACT OF THE DISCLOSURE

A compact, in-line valve assembly consists of a hollow valve body, a seat, and a first diaphragm assembly including a deflectable portion forming a first volume
5 between the seat and the first diaphragm assembly. A second diaphragm is attached to the first diaphragm assembly such that a second volume is defined between the second diaphragm and the second opening. A third volume is formed between the first diaphragm assembly and the
10 second diaphragm and is sealed from the first volume and the second volume. A process flows through the first diaphragm assembly between the first volume and the second volume. A low-leak rate, self-aligning head assembly including a stem and a head coupled are coupled
15 to the first diaphragm assembly. A deflection of the deflectable portion and the second diaphragm provides movement to open and close the head from the valve seat.